## Studies Plan

### EDMX - Materials science and Engineering 2019-20

#### Core courses

<table>
<thead>
<tr>
<th>Courses</th>
<th>Language Code</th>
<th>Section</th>
<th>Teacher</th>
<th>Exam</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D Electron Microscopy and FIB-Nanotomography</td>
<td>E</td>
<td>MSE-704</td>
<td>EDMX</td>
<td>Cantoni</td>
<td>1</td>
</tr>
<tr>
<td>CCMX Advanced Course - Additive Manufacturing of Polymeric Materials - 3D Camp</td>
<td>E</td>
<td>MSE-661</td>
<td>EDMX</td>
<td>Bourban, Various</td>
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<tr>
<td>CCMX Advanced Course - Advanced X-ray Diffraction Methods for Coatings: strain, defects and deformation analysis of thin films</td>
<td>E</td>
<td>MSE-628</td>
<td>EDMX</td>
<td>Dommann, Neels</td>
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<tr>
<td>CCMX Advanced Course - From Additive Manufacturing to Field-assisted Sintering</td>
<td>E</td>
<td>MSE-713</td>
<td>EDMX</td>
<td>Bowen, Derlet, Zhao</td>
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<tr>
<td>CCMX Advanced Course - Inorganic Particle Synthesis by Precipitation: From Nanoparticles to Self-organised Mesocrystals and from Theory to Practice</td>
<td>E</td>
<td>MSE-653</td>
<td>EDMX</td>
<td>Bowen, Hofmann, Niederberger, Testino</td>
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<tr>
<td>CCMX Advanced Course - Instrumented Nanoindentation</td>
<td>E</td>
<td>MSE-656</td>
<td>EDMX</td>
<td>Bushby, Randall</td>
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<tr>
<td>CCMX Summer School - Characterisation of Materials (2017)</td>
<td>E</td>
<td>MSE-805</td>
<td>EDMX</td>
<td>Cantoni, Michaud, Various, lecturers</td>
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<tr>
<td>CCMX Winter School - Additive Manufacturing of Metals and the Material Science Behind II</td>
<td>E</td>
<td>MSE-657</td>
<td>EDMX</td>
<td>Ceriotti, Logé, Various, lecturers</td>
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<tr>
<td>CCMX Winter School - Nanoparticles: From Fundamentals to Applications in Life Sciences</td>
<td>E</td>
<td>MSE-632</td>
<td>EDMX</td>
<td>Various, lecturers</td>
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<tr>
<td>CCMX Winter School - Surface Science: Fundamentals, Properties and Selected Applications</td>
<td>E</td>
<td>MSE-664</td>
<td>EDMX</td>
<td>Brune, Dommann, Mischier, Various, lecturers</td>
<td>2</td>
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</tbody>
</table>

## Crystal growth by epitaxy
- **Type**: EDMX
- **Instructor**: Fontcuberta i Morral
- **Format**: Multiple
- **Credits**: 2

## Crystallography of structural phase transformations
- **Type**: EDMX
- **Instructor**: Cayron
- **Format**: Written
- **Credits**: 1

## Design and analysis of experiments in materials science and engineering
- **Type**: EDMX
- **Instructor**: Lemaitre
- **Format**: Written
- **Credits**: 2

## Effects of radiation on materials
- **Type**: EDMX
- **Instructors**: Bertsch, Dai, Pouchon, Schäublin, Seifert, Spättig
- **Format**: Oral
- **Credits**: 2

## Electrochemistry in Corrosion Research
- **Type**: EDMX
- **Instructors**: Mischler, Various lecturers
- **Format**: Project report
- **Credits**: 1

## Electron Microscopy for Life Science
- **Type**: EDMX
- **Instructors**: Demurtas, Knott
- **Format**: Written
- **Credits**: 1

## Introduction to scanning electron microscopy microanalysis techniques
- **Type**: EDMX
- **Instructors**: Maeder, Michler
- **Format**: Written
- **Credits**: 1

## Laser Materials Processing
- **Type**: EDMX
- **Instructors**: Hoffmann, Leinenbach, Wasmer
- **Format**: Oral
- **Credits**: 2

- **Type**: EDMX
- **Instructor**: Scrivener
- **Format**: Written
- **Credits**: 2

## Methods of Modelling and Simulation of Materials Science
- **Type**: EDMX
- **Instructors**: Carter, Matt
- **Format**: Oral presentation
- **Credits**: 1

## Modeling of advanced composites: processing and mechanical properties
- **Type**: EDMX
- **Instructors**: Hoës(s), académiques(s), Michaud
- **Format**: Multiple
- **Credits**: 1

## Nanofabrication with focused electron and ion beams
- **Type**: EDMX
- **Instructors**: Hoffmann, Utke
- **Format**: Multiple
- **Credits**: 2

## Non-destructive evaluation methods
- **Type**: EDMX
- **Instructor**: Lüthi
- **Format**: Oral
- **Credits**: 2

## Optical Materials: Fundamental concepts and recent developments
- **Type**: EDMX
- **Instructor**: Dasgupta
- **Format**: Oral
- **Credits**: 1

## Piezoelectric materials, properties and devices
- **Type**: EDMX
- **Instructor**: Damjanovic
- **Format**: Written
- **Credits**: 1

## Powder Characterisation and Dispersion
- **Type**: EDMX
- **Instructor**: Bowen
- **Format**: Written
- **Credits**: 1

## Powder Diffraction School - Modern Synchrotron Methods
- **Type**: EDMX
- **Instructors**: Casati, Various lecturers
- **Format**: Oral
- **Credits**: 2

## Scanning and Analytical Transmission Electron Microscopy
- **Type**: EDMX
- **Instructors**: Alexander, Cantoni, Hébert, La Grange
- **Format**: Oral presentation
- **Credits**: 1
<table>
<thead>
<tr>
<th>Courses</th>
<th>Language Code</th>
<th>Section</th>
<th>Teacher</th>
<th>Exam</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Scanning electron microscopy techniques (a)</td>
<td>E</td>
<td>MSE-636(a)</td>
<td>EDMX</td>
<td>Cantoni</td>
<td>Written</td>
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<td>Navratilova</td>
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<tr>
<td>Scanning electron microscopy techniques (b)</td>
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<td>Science and technology of UV-induced polymerization</td>
<td>E</td>
<td>MSE-703</td>
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<td>Leterrier</td>
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<td>Statistical methods in atomistic computer simulations</td>
<td>E</td>
<td>MSE-639</td>
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<td>Ceriotti</td>
<td>Project report</td>
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<td>Superconducting electronics: A materials perspective</td>
<td>E</td>
<td>MSE-603</td>
<td>EDMX</td>
<td>Moll</td>
<td>Project report</td>
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<td>(Next time : Spring 2020)</td>
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<td>Transmission electron microscopy and diffraction (a)</td>
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<td>MSE-637(a)</td>
<td>EDMX</td>
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<td>Transmission electron microscopy and diffraction (b)</td>
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<td>Transport processes in cementitious materials</td>
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<td>X-Ray Analysis for thin films</td>
<td>E</td>
<td>MSE-627</td>
<td>EDMX</td>
<td>Dommann</td>
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<td>Other doctoral courses (EDOC) (.)</td>
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### Challenges and Opportunities in Energy Research

(Postponed)

- **Language Code**: ChE
- **Section**: 803
- **Teacher**: Buonsanti
- **Exam**: Written & Oral
- **Credit**: 2

### Master courses

#### Seminar series on advances in materials (autumn)

(You are most welcome to follow the seminar series each semester. However, you can only obtain ECTS credit points during one single semester.)

- **Language Code**: MSE
- **Section**: 470(a)
- **Teacher**: Stellacci
- **Exam**: Written
- **Credit**: 2

#### Seminar series on advances in materials (spring)

(You are most welcome to follow the seminar series each semester. However, you can only obtain ECTS credit points during one single semester.)

- **Language Code**: MSE
- **Section**: 470(b)
- **Teacher**: Klok
- **Exam**: Written
- **Credit**: 2